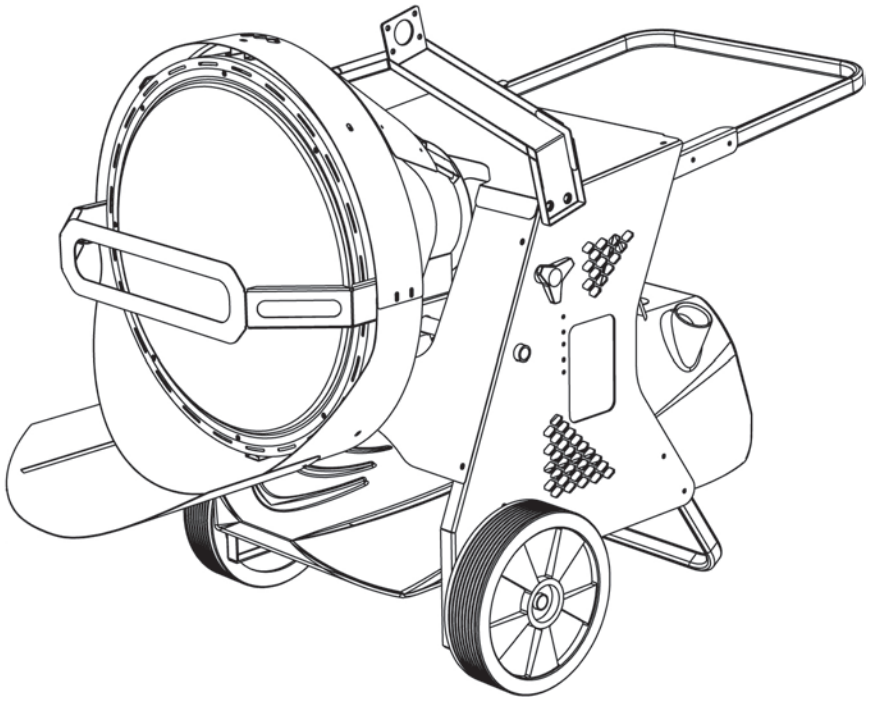
OPERATING INSTRUCTIONS AND OWNER'S MANUAL

READ INSTRUCTIONS CARE FULLY: Read and follow all instructions. Place instructions in a safe place for future reference. Do not allow anyone who has not read these instructions to assemble, light, adjust or operate the heater.

HEATSTAR
BY ENERCO

MODEL HS155IR



DIRECT FIRED INFRARED PORTABLE HEATER

WARNING : If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

— Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
— Service must be performed by a qualified service agency.

This is an unvented portable heater. It uses air (oxygen) from the area in which it is used. Adequate combustion and ventilation air must be provided. Refer to page 5.

WARNING:

⚠ YOUR SAFETY IS IMPORTANT TO YOU AND TO OTHERS, SO PLEASE READ THESE INSTRUCTIONS BEFORE YOU OPERATE THIS HEATER.

GENERAL HAZARD WARNING:

⚠ FAILURE TO COMPLY WITH THE PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS HEATER, CAN RESULT IN DEATH, SERIOUS BODILY INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARDS OF FIRE, EXPLOSION, BURN, ASPHYXIATION, CARBON MONOXIDE POISONING, AND/OR ELECTRICAL SHOCK.

⚠ ONLY PERSONS WHO CAN UNDERSTAND AND FOLLOW THE INSTRUCTIONS SHOULD USE OR SERVICE THIS HEATER.

⚠ IF YOU NEED ASSISTANCE OR HEATER INFORMATION SUCH AS AN INSTRUCTIONS MANUAL, LABELS, ETC. CONTACT THE MANUFACTURER.

WARNING:

⚠ NOT FOR HOME OR RECREATIONAL VEHICLE USE

WARNING:

⚠ FIRE, BURN, INHALATION, AND EXPLOSION HAZARD. KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIALS, PAPER OR CARDBOARD, A SAFE DISTANCE AWAY FROM THE HEATER AS RECOMMENDED BY THE INSTRUCTIONS NEVER USE THE HEATER IN SPACES WHICH DO OR MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES, OR PRODUCTS SUCH AS GASOLINE, SOLVENTS, PAINT THINNER, DUST PARTICLES OR UNKNOWN CHEMICALS.

WARNING:

⚠ **The State of California requires the following warning:** COMBUSTION BY-PRODUCTS PRODUCED WHEN USING THIS PRODUCT CONTAIN CARBON MONOXIDE, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS (OR OTHER REPRODUCTIVE HARM).

WARNING:

READ THE INSTRUCTIONS GIVEN IN THIS MANUAL BEFORE USING THE APPLIANCE.

- DO NOT USE GASOLINE, NAPHTHA OR VOLATILE FUELS.
- THE ELECTRICAL SYSTEM TO WHICH THE APPLIANCE IS CONNECTED MUST COMPLY WITH ALL SAFETY REGULATIONS IN FORCE. A RESIDUAL CURRENT CIRCUIT BREAKER MUST BE PROVIDED ON THE MAIN DISTRIBUTION BOARD.
- UNPLUG THE HEATER BEFORE ATTEMPTING ANY SERVICE OR MAINTENANCE.
- ALWAYS CHECK THE POWER SUPPLY CABLE BEFORE USE. IT MUST NOT BE BENT, CRUSHED, OR ANYWAY DAMAGED.
- THE POWER SUPPLY CABLE MUST BE REPLACED ONLY BY QUALIFIED PERSONNEL.
- ONLY USE AN ORIGINAL H07RN-F POWER CABLE WITH WATERPROOF PLUG.
- DO NOT TOUCH THE EXHAUST GAS OUTLET. DANGER OF BURNS!

CONTENTS

WARNINGS 2
SPECIFICATIONS 3
OPERATION 4
SAFETY DEVICES 4
MAINTENANCE 5
TROUBLESHOOTING 6
WIRING DIAGRAMS 7
PARTS LIST 8

IMPORTANT

Before using the heater, read and understand all instructions and follow them carefully. The manufacturer is not responsible for damages to goods or persons due to improper use of units.

GENERAL RECOMMENDATIONS

The heater described in this manual is a portable oil-fueled infrared heat generator running on heating oil.

Its easy handling and large fuel tank allow it to be used locally and temporarily with complete stand-alone operation. The area to be heated is therefore hit by an even and uniform flow of heat, as can be seen by the shape of the irradiation cone (18), without air movement.

The unit is a direct combustion hot generator that works by sending both hot air and combustion products in the room you wish to heat: all the necessary precautions must therefore be taken to guarantee a sufficient exchange of air.

Always follow local ordinances and codes when using this heater:

- Read and follow this owner's manual before using the heater;
- THE INSTALLATION OF THE UNIT SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION. Also, as a recommended installation practice reference should be made to the current issue of CSA B139, Installation Code for Oil Burning Equipment in Canada and NFPA 31 Standard for the Installation of Oil-Burning Equipment In the USA;
- Use only in places free of flammable vapours or high dust content;
- Never use heater in immediate proximity of flammable materials (the minimum distance must be 10 feet);
- Make sure fire fighting equipment is readily available;
- Make sure sufficient fresh outside air is provided according to the heater requirements. Direct combustion heaters should only be used in well vented areas in order to avoid carbon monoxide poisoning;
- A rough estimate of opening required for each gallon (US) of capacity is three square foot at heater level, for direct-fired heaters;
- The heater is installed and connected to an electrical switchboard;
- Ensure that the machine resting surface or ground is not made of flammable material;
- Minimum clearances from combustible material must be:
  30" from side and rear (air inlet) of heater
  80" from ceiling
  40" on air outlet of heater.
- Never block air inlet (rear) or air outlet (front);
- In case of very low temperatures add kerosene to the heating oil;
- Connect the power cord to the mains and wait 15 min at least be fore starting heater, to allow pre-heated filter warming heating oil inside the filter;
- Make sure heater is always under surveillance and keep children and animals away from it;
- Before starting the heater always check free rotation of ventilator;
- Heater is not ductable.
- Unplug heater when not in use.

TECHNICAL SPECIFICATIONS			FIRE 155
Max heating output		[BTU/h]	154.237
Fuel consumption		[gal/h]	1,11
Power supply	Phase		1
	Voltage	[V]	120
	Frequency	[Hz]	60
Power consumption		[W]	440
Nozzle		[USgal/h]	Delavan 0,85 - 80° W
Pump pressure		PSI	174
Adjustment of combustion air flap		[N°]	2
Tank capacity		[USgal]	17.17
Noise level at 1 m		[dBA]	72
Dimensions, L x W x H		[in]	55.5 x 28.03 x 41.5
Weight		[lb]	161

SAFETY DEVICES

The unit is fitted with an electronic flame control box. In case of malfunction this box will cut in and stop the heater, at the same time the pilot lamp in the control box reset button (13) will light up.

⚠ WARNING

The reset push-button emits a different colour light, depending on the state of the machine:
• green, when the machine is running regularly;
• red, when the machine is in safety lock-out mode: to restart it , the reset button (13) must be pressed.

Heaters are also equipped with an overheat thermostat safety cut out which will stop the heater in case of overheating. This thermostat will reset automatically but you will have to depress button (13) on control box before being able to restart the heater.

OPERATION

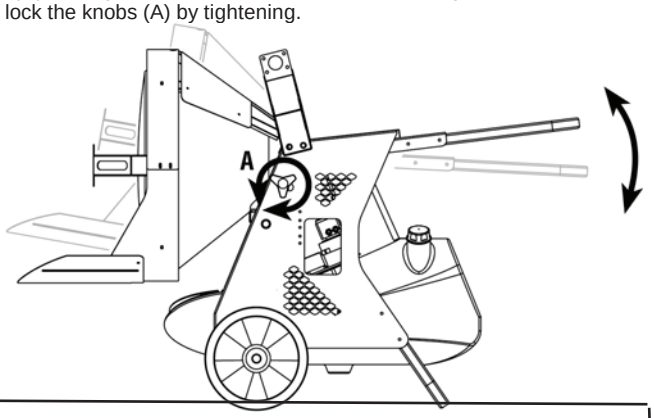
Before any attempt of starting the heater is made, check that your electrical supply conforms to the data on the model plate.

⚠ WARNING

Mains must be fitted with a thermo-magnetic differential switch.
Unit plug must be linked to a socket with a mains switch.

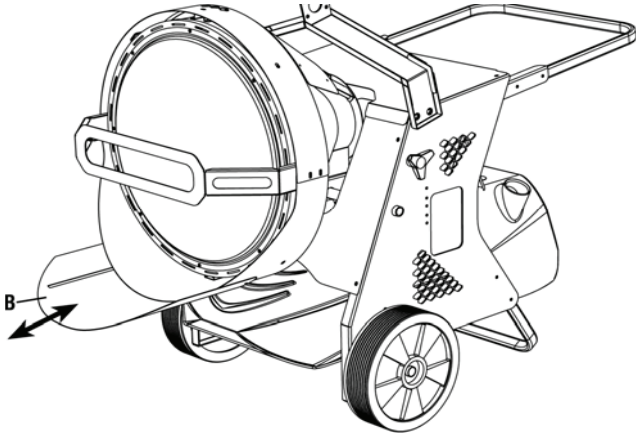
The hot generator must be placed on a flat, stable and level surface to avoid machine tipping and/or gas oil leakage from the tank fuel cap.

The flow of heat can be directed upward with an approximately 10° angle: loosen the two locking knobs (A) and tilt the combustion unit by pressing on the handle until the desired angle is reached, then lock the knobs (A) by tightening.



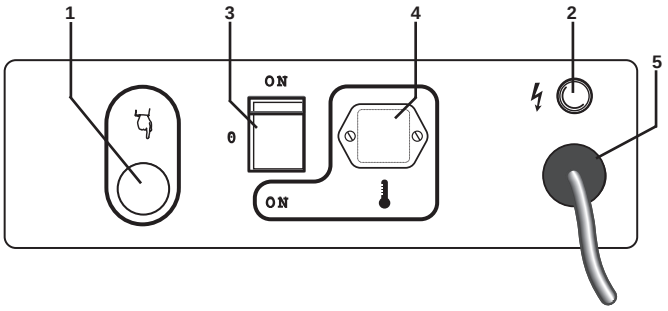
⚠ WARNING

Before start-up, always ensure the guard (B) has been completely pulled out, so as to guarantee maximum protection of the machine resting surface.



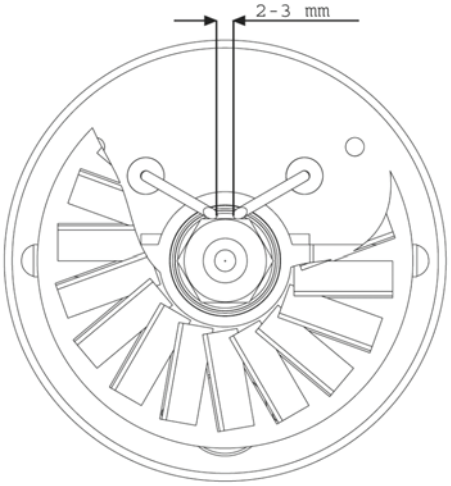
Before any attempt of starting the heater is made, check that your electrical supply conforms to the data on the model plate.

Control Board



1 RESET BUTTON WITH CONTROL LAMP
2 CONTROL LAMP
3 MAIN SWITCH
4 ROOM THERMOSTAT PLUG
5 POWER CORD

Gap of Electrodes



Clearances

The following minimum safety clearances from materials or objects in the surroundings of the heater must be ensured:

Sides	30 in.	Air Inlet	30 in.
Top	80 in.	Air outlet	40 in.

- Floors and ceilings must be made of fireproof materials in the room where the heater is operated.
- The air inlet and outlet must never be blocked for any reason.
- Install the heater on a flat, level floor in a steady position.
- It is forbidden to connect direct-fired heaters to air ducts.

⚠ WARNING

- DO NOT USE GASOLINE, NAPHTHA OR VOLATILE FUELS.
- STOP HEATER BEFORE ADDING FUELS.
- ALWAYS FILL OUTDOORS AWAY FROM OPEN FLAME
- DO NOT USE EXTERNAL FUEL SOURCE.
- DO NOT OPERATE HEATER WHERE FLAMMABLE LIQUIDS OR VAPORS MAY BE PRESENT.
- DO NOT START HEATER WHEN CHAMBER IS HOT
- DO NOT START HEATER WHEN EXCESS FUEL HAS ACCUMULATED IN THE CHAMBER.
- DO NOT PLACE COOKING UTENSILS ON TOP OF THE HEATER.
- PLUG ELECTRICAL CORD INTO A PROPERLY GROUNDED THREE-PRONG RECEPTACLE.

The generator can only work automatically when a control device, such as for example a thermostat or a timer, is connected to the generator. Connection to the generator is made by removing the socket cover(4) and inserting the thermostat plug.

To start the machine you must:

- If connected to the thermostat, turn the switch to (ON + 🌡);
- If not connected to the thermostat, turn the switch to (ON).

When unit is started for the first time or is started after the oil tank has been totally emptied, the flow of oil to the burner may be impaired by air in the circuit. In this case the control box will cut out the heater and it might be necessary to renew the starting procedure once or twice by depressing the reset button (1).

Should the heater not start, check that oil tank is full and depress reset button (1).

Should the heater still not work, please refer to chapter "OBSERVED FAULTS, CAUSES AND REMEDIES".

STOPPING THE HEATER

Set main switch (3) on "0" position or turn thermostat or other control device on lowest setting.

The flame goes out and the fan continues to work for approx. 90sec. cooling the combustion chamber.

SAFETY DEVICES

The unit is fitted with an electronic flame control box. In case of malfunction this box will cut in and stop the heater, at the same time the pilot lamp in the control box reset button (1) will light up.

Heaters are also equipped with an overheat thermostat safety cutout which will stop the heater in case of overheating. This thermostat will reset automatically but you will have to depress button (1) on control box before being able to restart the heater.

TRANSPORT

⚠ WARNING

- Before making any attempt to restart heater find and eliminate reason of overheating.

Before heater is moved it must be stopped and unplugged. Before moving the heater wait till it has totally cooled off and make sure oil tank cap is securely fixed.

The hot air generators with wheels must be wheeled. The suspended version which has no wheels must be transported with adequate machinery.

MAINTENANCE

Preventive and regular maintenance will ensure a long trouble free life to your heater.

⚠ WARNING

- Never service heater while it is plugged in, operating or hot. Severe burns or electrical shock can occur.

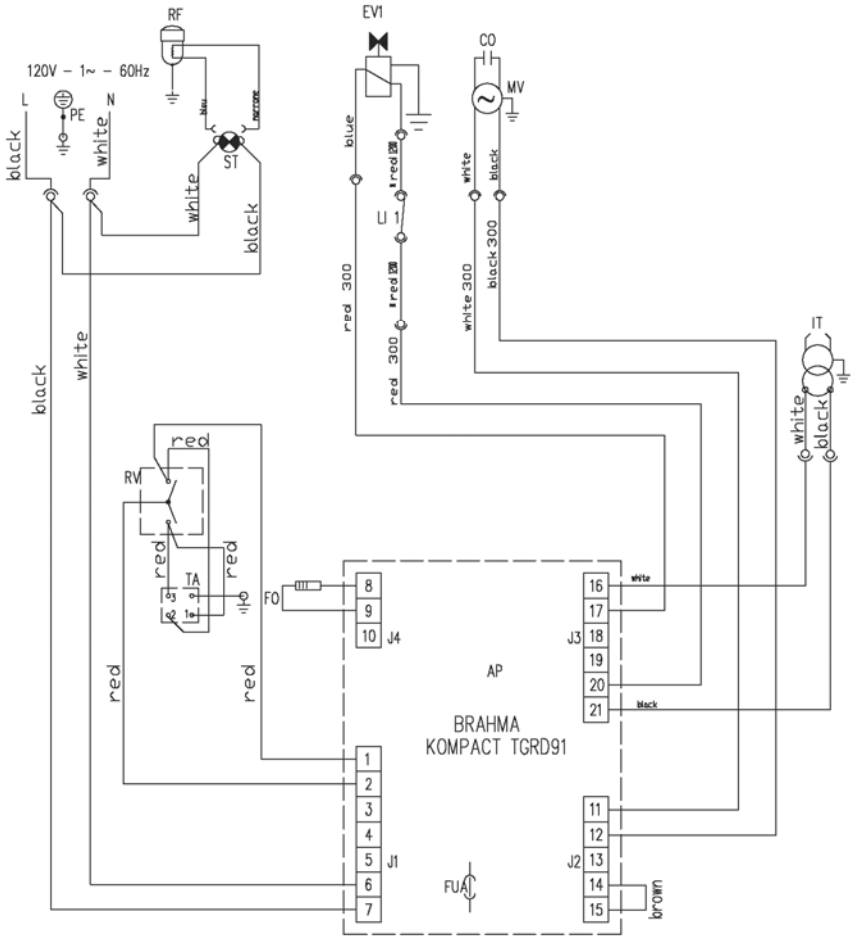
Every 50 hours of operation: disassemble filter and wash with clean oil, remove upper body parts and clean inside and ventilator with compressed air, check correct attachment of H.V. connectors to the electrodes and check H.V. cables, remove burner assembly, clean and check electrode settings, adjust according to scheme "GAP OF ELECTRODES".

TROUBLESHOOTING

OBSERVED FAULT	CAUSE	REMEDY
• Motor does not start, no ignition	• No electrical current	• Check mains
		• Check proper positioning and functioning of switch
		• Check fuse
	• Wrong setting of room thermostat or other control (thermostat and clock)	• Check correct setting of heater control. If thermostat, make sure selected temperature is higher than room temperature
	• Thermostat or other control defective	• Replace control device
	• Electrical motor defective	• Replace electrical motor
	• Electrical motor bearings defective	• Replace electrical motor
	• Burned out condenser	• Replace condenser
• Motor starts, no ignition or cuts out	• Electric ignitor defective	• Check connection of H.T. leads to electrodes and transformer
		• Check electrodes setting (see scheme Fig. 2)
		• Check electrodes for cleanliness
		• Replace H.T. transformer
	• Flame control box defective	• Replace control box
	• Photocell defective	• Clean or replace photocell
	• Not enough or no fuel at all at burner	• Check state of motor-pump plastic coupling
		• Check fuel line system including fuel filter for possible leaks
		• Clean or replace oil nozzle
	• Solenoid defective	• Check electrical connection
		• Clean or replace solenoid
• Motor starts, heater emits smoke	• Not enough combustion air	• Make sure air inlet and outlet are free
		• Check setting of combustion air flap
		• Clean burner disc
	• Too much combustion air	• Check setting of combustion air flap
	• Fuel contaminated or contains water	• Drain fuel in tank and replace with clean fuel
		• Clean or replace oil filter
	• Air leaks in fuel circuit	• Check fuel line and filter for possible leaks
	• Not enough fuel at burner	• Check pump pressure
		• Clean or replace fuel nozzle
	• Too much fuel at burner	• Check pump pressure
		• Replace nozzle
• Heater does not stop	• Solenoid defective	• Replace solenoid coil or complete solenoid

If heater is still not working properly, please revert to nearest authorized dealer.

WIRING DIAGRAM



AP CONTROL BOX

TA ROOM THERMOSTAT PLUG

ST PILOT LAMP

LI1 OVERHEAT THERMOSTAT

EV1 SOLENOID VALVE

FO PHOTOCELL

CO CAPACITOR

MV FAN MOTOR

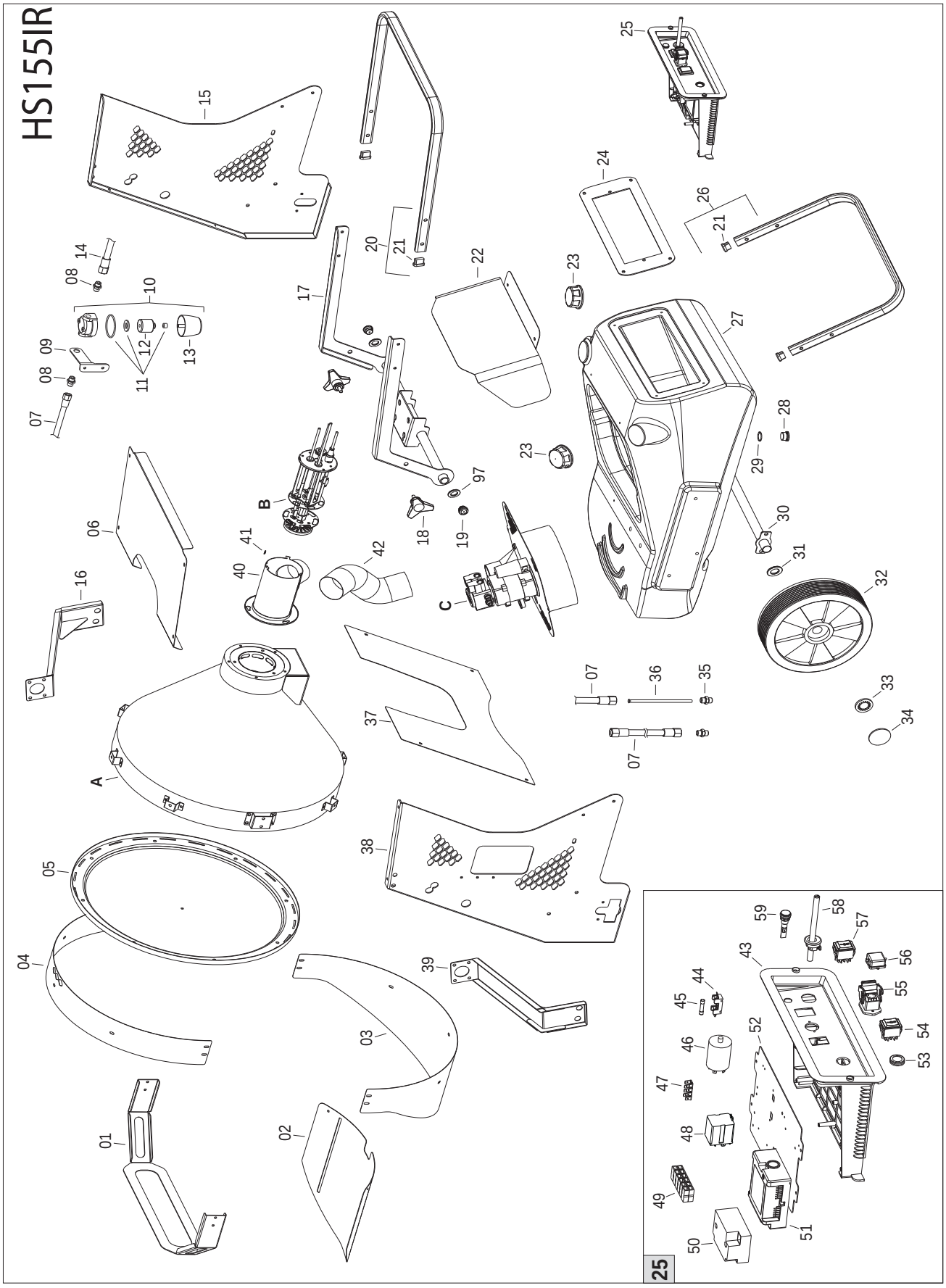
FUA FUSE

LF ANTI-JAMMING FILTER

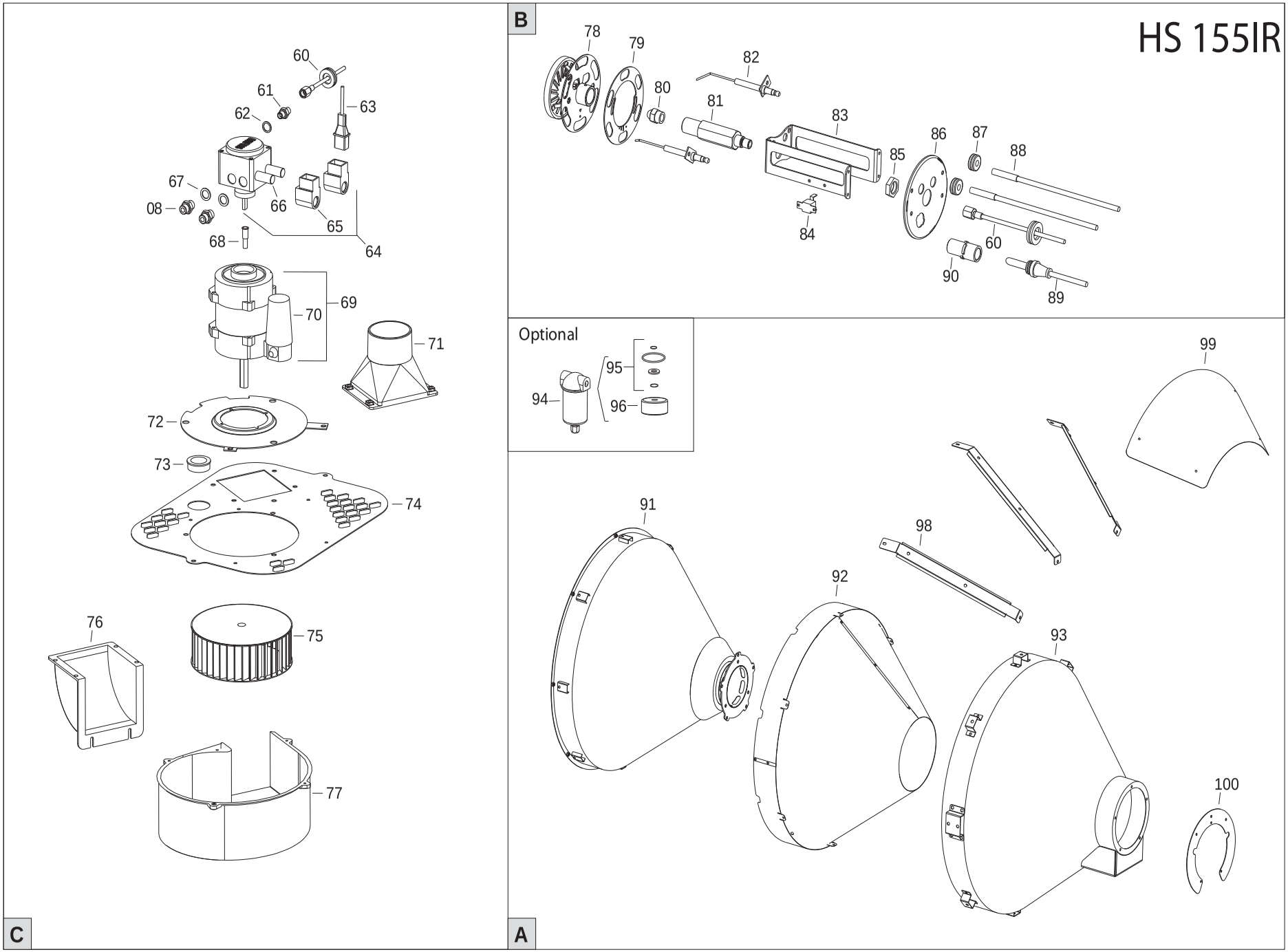
RV MAIN SWITCH

RF HEATED FILTER

>>>OPTIONAL


HS155IR
PL 01/08
25

HS 155IR


B
78
79
82
80
81
83
86
87
88
85
84
60
90
89
Optional
94
95
96
99
91
98
92
93
100
60
61
62
63
67
08
66
65
68
64
69
70
71
72
73
74
76
75
77
C
A

NO.	HS#	BM2 #	DESCRIPTION
01	50201	G11001	Front bumper protection
02	50202	G11029-N500	Lower protection plate
03	50203	G11028-N500	Lower protection
04	50204	G11030-N500	Upper protection
05	50205	G11005	Radiant front disc
06	50206	G11031-9010	Upper body
07	50055	I40329	Tube BP 1/4"FF L. 260mm
08	50052	I20104	Nipple FE 1/4" MM
09	50054	G06104-9005	Filter support
10	50024	T20201	Filter w/cartridge
11	50025	T20234	O-ring kit oil filter
12	50030	T20206	Filter cartridge
13	50251	T20212	Filter housing
14	50207	I40340	Tube BP 1/4"FF L.580mm
15	50208	G11007-9010	Right side cover plate
16	50209	G11032-9005	Bracket
17	50210	G11009-9005	Frame
18	50212	G06322	Knurled wheel M8x25
19	40477	C30355	Plug ø25mm
20	50213	P20187-9005	Handle
21	50214	C30361	Plug
22	50215	G11010-9010	Rear panel
23	50216	C30383	Drain plug
24	50217	G11011-9005	Electrical drawer support
25	50218	G00298	Electrical components drawer
26	50219	P20186-9005	Foot
27	50220	P50139	Fuel tank 65L
28	40532	I25020	Drain plug M16x1.5mm
29	50221	M20313	Washer 3/8"
30	50224	G11012-9005	Wheel axle
31	40533	M20111	Washer ø26xø44øx4
32	50225	C10555	Wheel ø300-ø025
33	50226	M20204	Wheel holder ø25
34	50318	C10513-N	Cover
35	50063	I30737	Nipple OT 1/4"M-M12x1.75M
36	50061	I30696	Dip tube L 220mm
37	50227	G11033-9010	Front panel
38	50228	G11014-9010	Left cover plate
39	50229	G11034-9005	Bracket
40	50230	G11016	Blast tube
41	50413	E20671	Terminal board
42	50231	I40805	Air duct L=350mm
43	50246	G06153	Electrial components drawer
50	50319	E10930	Transformer H.T. BRAHMA
51	50320	E40124	Control box BRAHMA TGRD 91
52	50420	G06184	Plate for electrical components
53	50325	E20418	Stop button protection

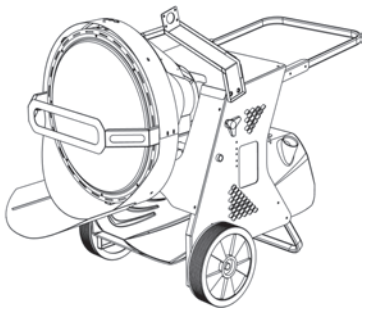
NO.	HS#	BM2 #	DESCRIPTION
54	50013	E10102-P	Switch 0-1
55	50570	E20640	Thermostat plug 3P+T
56	50011	E20665	Drain plug
57	50342	E10112-P	Switch 0-1
58	50009	E30443	Electrial wire w/plug and cable fastener
59	50008	E11030	Lamp 120V
60	50232	I40339	Micropipe L=450mm
61	50132	I20115	Nipple FE 1/8"MM
62	50234	M20128	Washer 1/8"x1.5
63	50433	T20442	Solenoid valve cable
64	50235	T20450	Pump BFP21 R3 Danfoss
65	50140	T20118	Solenoid spool Danfoss
66	50141	T20117	Solenoid valve Danfoss
67	50236	M20123	Washer 1/4"x1.5
68	50237	E10698	Coupling
69	50118	E10677-110	Motor 200W w/condenser
70	50472	E11233	Condenser 20µF
71	50238	C10328	Air snorkel
72	50239	G06200-9005	Support fan and motor
73	50411	C30372	Cable protection ø35mm
74	50240	G11025-9005	Support fan and motor
75	50279	T10262	Fan AP 160x55 F12.7
76	50468	C10329	90° elbow connection
77	50241	C10326	Spiral fan
78	50242	G11018	Turbo disc
79	50243	G11019	Air regulation disc
80	50244	T20363	Nozzle 0.85 GPM 80°W
81	50245	I33008	Nozzle support
82	50134	E10215	Electrodes
83	50247	G11020	Electrodes stirrup
84	50414	E50109	Fan thermostat
85	50131	I31034	Nut M14
86	50248	G11021	Burner flange ø 102mm
87	50522	C30368	Cable protection ø12mm
88	50135	G02076	H.T. cable connection L=1000mm
89	50323	E50328	Photo cell BRAHMA FC 13
90	50336	E50327	Holder for photo cell
91	50249	G11035	Internal cone
92	50250	G11023	Intermediate cone
93	50277	G11024	External cone
94	50053	T20239	Oil pre-heaters filter 1/4"
95	50144	T20241	O-ring kit oil filter
96	50145	T20242	Fuel filter cartridge
97	50277	I39107	Seal 1.1/4"
98	50278	G11036-N500	Support
99	50281	G11037-N500	Isolation sheet
100	50282	G11038-N500	Wrapper

OPERATING INSTRUCTIONS AND OWNER'S MANUAL

READ INSTRUCTIONS CAREFULLY: Read and follow all instructions. Place instructions in a safe place for future reference. Do not allow anyone who has not read these instructions to assemble, light, adjust or operate the heater.

HEATSTAR
BY ENERCO

MODEL



WARNING :

USE ONLY MANUFACTURER'S REPLACEMENT PARTS. USE OF ANY OTHER PARTS COULD CAUSE INJURY OR DEATH. REPLACEMENT PARTS ARE ONLY AVAILABLE DIRECT FROM THE FACTORY AND MUST BE INSTALLED BY A QUALIFIED SERVICE AGENCY.

PARTS ORDERING INFORMATION:

PURCHASING : Accessories may be purchased at any Mr. Heater/HeatStar local dealer or direct from the factory

FOR INFORMATION REGARDING SERVICE

Please call Toll-Free 800-251-0001 • www.enerco-mrheater.com

Our office hours are 8:30 AM – 5:00 PM, EST, Monday through Friday.

Email to: techservice@enerco-mrheater.com

Please include the model number, date of purchase, and description of problem in all communication.

LIMITED WARRANTY

The company warrants this product to be free from imperfections in material or workmanship, under normal and proper use in accordance with instructions of The Company, for a period of one year from the date of delivery to the buyer. The Company, at its option, will repair or replace products returned by the buyer to the factory, transportation prepaid within said one year period and found by the Company to have imperfections in material or workmanship.

If a part is damaged or missing, call our Technical Support Department at 800-251-0001.

Address any Warranty Claims to the Service Department, Enerco Group, Inc., 4560 W. 160TH ST., Cleveland, Ohio 44135. Include your name, address and telephone number and include details concerning the claim. Also, supply us with the purchase date and the name and address of the dealer from whom you purchased our product.

The foregoing is the full extent of the responsibility of the Company. There are no other warranties, express or implied. Specifically there is no warranty of fitness for a particular purpose and there is no warranty of merchantability. In no event shall the Company be liable for delay caused by imperfections, for consequential damages, or for any charges of the expense of any nature incurred without its written consent. The cost of repair or replacement shall be the exclusive remedy for any breach of warranty. There is no warranty against infringement of the like and no implied warranty arising from course of dealing or usage of trade. This warranty will not apply to any product which has been repaired or altered outside of the factory in any respect which in our judgment affects its condition or operation.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Enerco Group, Inc. reserves the right to make changes at any time, without notice or obligation, in colors, specifications, accessories, materials and models.

ENERCO GROUP, INC., 4560 W. 160TH ST., CLEVELAND, OHIO 44135 • 800-251-0001
Mr. Heater is a registered trademark of Enerco Group, Inc.
© 2004, ENERCO GROUP, INC. All rights reserved